

ABSTRACT

Described is a novel family of cell surface serpentine transmembrane antigens. Two of the proteins in this family are exclusively or predominantly expressed in the prostate, as well as in prostate cancer, and thus members of this family have been termed "STEAP" (Six Transmembrane Epithelial Antigen of the Prostate). Four particular human STEAPs are described and characterized herein. The human STEAPs exhibit a high degree of structural conservation among them but show no significant structural homology to any known human proteins. The prototype member of the STEAP family, STEAP-1, appears to be a type IIIa membrane protein expressed predominantly in prostate cells in normal human tissues. Structurally, STEAP-1 is a 339 amino acid protein characterized by a molecular topology of six transmembrane domains and intracellular N- and C- termini, suggesting that it folds in a "serpentine" manner into three extracellular and two intracellular loops. STEAP-1 protein expression is maintained at high levels across various stages of prostate cancer. Moreover, STEAP-1 is highly over-expressed in certain other human cancers.